

Dictionary of Gems and Gemology

Mohsen Manutchehr-Danai

Dictionary of Gems and Gemology

Third Edition

With approx. 27 000 entries and 1500 figures

 Springer

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Every other author may aspire to praise; the lexicographer can only hope to escape reproach.

Dr. Samuel Johnson

Preface to the Third Edition

This revision (third edition) is being published 4 years after the publication of the second edition. Many entries have been improved and circa 500 new terms have been added. It includes more than 27,000 entries, 1,500 graphic figures, and nearly 50 tables. New entries include notable sapphires (comprising blue sapphires, sapphires of other colors, engraved or carved sapphires), notable rubies (engraved or carved rubies), and corundums.

If you have criticism or suggestions, please feel free to contact the author.

Acknowledgments

I thank my beloved son, Human, who is worthy of more praise than I have space for. He has always stood by me.

I gratefully acknowledge the help and support of Dr. Christian Witschel, Dr. Sylvia Blago, and Mrs. Emily Zack of Springer, Heidelberg.

My thanks go also to my friend and attorney, Mr. Karl Abt, for his support and professionalism.

Manutchehr-Danai, Mohsen

Regensburg, Germany 2008

Preface to the Second Edition

The worldwide acceptance of the first edition of this book encouraged me to extensively revise and extend the second edition. The book was of value to readers of widely ranging interest, as seen from the letters received from scientists, students, mining engineers, periodical papers, teachers and students.

This revision comes 5 years after the publication of the first edition. Many entries have been improved and now include new data. The book includes more than 25,000 entries, 2,000 graphic figures, and ca. 40 tables.

The first edition was criticized by some who thought that some entries were not related to respective materials, but I can only repeat that many minerals were described in the form of inclusions or as paragenesis, necessary for determining the other gem stone materials.

In this edition, the chapters on light, color, and colorant are of great interest, as several new terms have been used in these chapters.

This edition contains ca. 26,000 entries and more than 3,000 figures.

If you have criticism or suggestions, please feel free to contact the author.

Acknowledgments

I appreciate the time and effort of Ms. Pamela Krinsky, Meshed/Iran for proof reading this second edition. I am greatly impressed by the proof reading that she has done.

I appreciate the criticism of Mr. Michel, J.C. Sandillon, France, and the time and effort he has spent. He has provided me with some new and exact information about diamond localities in India.

I appreciate the time and effort of Dr. Hofmeister from Institut für Edelsteinforschung, University of Mainz, Germany, in helping me to find some books and for useful information.

I appreciate the time and effort of Dr. Niedremayr of the Naturhistorisches Museum, Vienna, Austria, who provided me with new information about jade.

I thank my beloved son Human, who is worthy of far more acknowledgment than I have space for. He has always stood by me.

I cannot finish without gratefully acknowledging the help and support of Dr. Witschel, of Springer, Heidelberg.

My thanks also go to my friend and attorney Mr. Karl Abt for his support and professionalism.

Manutchehr-Danai, Mohsen
Regensburg, Germany 2004

Preface to the First Edition

Since World War II, the amount of information generated in the science of Gemology has increased tremendously. Therefore this book, the *Dictionary of Gems and Gemology* and related terms, was written with the aim of providing a relatively “complete dictionary to assist all students, hobbyists, scientists, and interested parties in the fields of Gems and Gemology.”

The forerunner to this book was called *Dictionary of Gems and Gemology* (English–Persian, Persian–English, published in Tehran, Iran in 1997) and was written with the aid of more than 30 reference books relating to gemology. In response to the effort required to clarify the terms within, I decided to compile a book that brings all the relevant terms into one book.

This new book eliminates the use of different reference books and compiles nearly all the relevant terms into a one-stop useful text. It took 25 years to collect the terms and the information to present a complete and functional lexicon.

The text is supported by nearly 170 illustrations and 21 tables, to provide detailed and succinct information.

I hope and trust that this book has the high standard of other gemological dictionaries.

If you have criticism or suggestions, please feel free to contact the author.

Acknowledgments

The author acknowledges all those who were of valuable assistance during the writing and publishing of this book.

My thanks go to my good friend Dr. Farhad Rahimi of Meshed University, Iran, for helping with my first book in English–Persian, Persian–English, and for his further work on my current book. I appreciate the time and effort taken by my good friend Mr. Bozozrgmehr Vakhshoori, who spent a great deal of time helping with this book and Mr. William O’Hara for his indefatigable effort in publishing this book. I am grateful to my proof reader Eleanor Gorman B.A. Communication, Australia. I would like to thank my beloved son Human who is worthy of far more acknowledgment than I have space for. My grateful appreciation goes to my good friend Dr. Hassan Parvizinia for his skillful graphic work. I appreciate the support and professionalism of my friend and attorney Mr. Karl Abt. I cannot end without gratefully acknowledging Dr. Heinz Sichert, University of Regensburg of Rechen Zentrum, Mrs. Heidi Krinner, and Mr. Hannes Völklén from Pustet Company, Regensburg.

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Los Angeles, Theran, Regensburg

Abbreviations and Symbols Used in the Text

Å	Ångström	Nanometer	10^{-9} m
<i>a</i>	cell edge in the <i>x</i> direction	nm	nanometer
Ab	albite $\text{NaAlSi}_3\text{O}_8$	o	ω or ordinary ray in uniaxial crystal.
Abbr.	abbreviation		Refractive index
α, β, γ	the three refractive indices in biaxial crystal from least, intermediate to greatest	ω	ordinary ray in uniaxial crystal. Refractive index
Adj.	adjective	Or	orthoclase KAlSi_3O_8
An	anorthite $\text{CaAl}_2\text{Si}_2\text{O}_8$	Pa-sec	Pascal-second
Ångström	0.1 nm	Port.	Portuguese
<i>b</i>	cell edge in the <i>y</i> direction	RI:	generally refractive index, also for cubic and amorphous substance
Birefringence	in a uniaxial crystal the difference between ω and ϵ . In biaxial crystal the difference between α and γ	RI:	refractive indices of ω : ordinary ray, ϵ :extraordinary ray in uniaxial crystal
<i>c</i>	cell edge in the <i>z</i> direction	RI:	refractive indices of α :alpha, β :beta, γ :gamma in biaxial crystal
°C	degrees Celsius, a unit of temperature, known as centigrade	Russia	formerly Soviet Union
ct(s).	carat(s) or metric carat(s)	SG	specific gravity
Diaphaneity	transparent or translucent, or opaque	Sri Lanka	formerly Ceylon
ϵ	extraordinary ray in a uniaxial crystal, refractive index	SWUV light	short-wave ultraviolet light
Fa	fayalite FeSiO_4	Thailand	formerly Siam
Fo	forsterite MgSiO_4	X []	X represents the number of formula units per unit cell
H	hardness on the Mohs's scale	<i>x, y, z</i>	crystallographic axes
Hz	hertz SI unit of frequency (c/s)	Zimbabwe	formerly Rhodesia
Lat.	Latin	⊖	optically negative when ϵ is greater than ω in uniaxial crystal. In biaxial, when intermediate refractive index β is near to γ than α
LWUV light	long-wave ultraviolet light	⊕	optically positive when ω is greater than ϵ in uniaxial crystal. In biaxial when intermediate refractive index β is near to α than γ
Malagasy	formerly Madagascar	→	see
Mt.	Mountain		
Myanmar	formerly Burma		
N.Y.	New York		

List of Illustrations

De Beers CSO, 1-Fire Rose cut, 2-Dahlia Cut, 2-Marigold Cut, 4-Sunflower Cut, 5-Zinna Cut.

Eppler, Praktische Gemmologie: Highlight brilliant-cut, King cut, Magna cut, and Royal 144 cut.

Liddicoat, GIA Diamond Dictionary: American Brilliant-cut, Baguette cut, Rondelle cut, tapered cut, Trielle cut, and whistle cut.

Maier, Brillianten und Perlen: situation of facets, modified brilliant cut, Peruzzi cut.

Miller and Sinkankas, Standard of Catalog of Gems: honeycomb cut, refraction of light, star, and step-brilliant cut.

Vollstädt and Baumgärtel, Edelsteine: Prismant.

Webster and Read, Gems: cross-rose-cut, blades of tortoise-shell